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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,141	06/05/2006	Paul William Lefley	LDWS-0005-US	5878

23550 7590 09/04/2008  
HOFFMAN WARNICK LLC  
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ALBANY, NY 12207

EXAMINER
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RAMADAN, RAMY O

ART UNIT	PAPER NUMBER
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2838

NOTIFICATION DATE	DELIVERY MODE
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09/04/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOCommunications@hwdpatents.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,141	<b>Applicant(s)</b> LEFLEY ET AL.	
	<b>Examiner</b> RAMY RAMADAN	<b>Art Unit</b> 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/30/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 14 and 16-18 are objected to because of the following informalities:

The limitation “a first further winding is arranged on the core” is objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear whether the term “a first further winding” is referring to one of the windings presented in claim 13 or referring to a new winding, which in this case has to be differentiated from the windings of claim 13. For examination purposes, the limitation has been interpreted as “a first winding of the windings of the at least two inductors is arranged on the core” (claim 14).

The limitation “a second further winding is arranged on the core” is objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear whether the term “a second further winding” is referring to one of the windings presented in claim 13 or referring to a new winding, which in this case has to be differentiated from the windings of claim 13. For examination purposes, the limitation has been interpreted as “a second winding of the windings of the at least two inductors is arranged on the core” (claim 16).

The term “resonant circuit(s)” lacks antecedent basis (claim 17, lines 4 and 5).

The limitation “the second half of the oscillation cycle” lacks antecedent basis and therefore the limitation is objected to as being indefinite (claim 18).

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1, 2, 4, 7 and 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Momotani et al. (US 5,614,804), hereinafter Momotani.**

As per claims 1-2 and 4, Momotani discloses (Col. 4, lines 52-67 and Col. 5, lines 1-27) and shows in Fig. 2, an apparatus for charging a secondary battery by supplied pulsed current as charging current comprising:

a DC/DC converter (48) (power converter) connectable to the secondary battery (30); and

a pulse generator (42) connectable to the DC/DC converter (48), the pulse generator triggers the DC/DC converter (48) to generate positive pulses of current for passing through the secondary battery (30) causing charging (electrochemical conversion) in the secondary battery (30).

As per claims 22-23, the method merely recites the steps of using the elements of the device as disclosed above and since each element must be present to perform the steps, the method as claimed would be inherent in view of the device as disclosed by Momotani.

As per claim 7, Momotani shows in Fig. 6, the pulses of current having a substantially constant pulse width, while the pulse width is controlled by the DC/DC converter (48).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**5. Claims 6, 8, 9 and 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momotani.**

As per claims 6, 8 and 9, Momotani discloses the claimed invention except for generating pulses of current having a duration of between around 50 to around 1000 microseconds, wherein the pulses of current have an amplitude around one hundred times the amplitude of current required to charge or discharge completely the available capacity of the battery over a twenty hour period (C.sub.20 charge) and wherein the battery has a settling time of between around 1 to 10 milliseconds to produce a duty cycle of between around 1:10 to around 1:200. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device as discloses by Momotani to generate pulses of current having a duration of between around 50 to around 1000 microseconds, wherein the pulses of current have an amplitude around one hundred times the amplitude of current required to charge or discharge completely the available capacity of the battery over a twenty hour period

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(C.sub.20 charge) and wherein the battery has a settling time of between around 1 to 10 milliseconds to produce a duty cycle of between around 1:10 to around 1:200, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As per claim 19, Momotani discloses and shows in Figs. 1 and 6, that the pulse generator (42) and the DC/DC converter (48) produce negative current pulses between the positive current pulses. But Momotani does not disclose two pulse generators and two converters for producing positive and negative pulses, however, Momotani discloses a single pulse generator (42) and a single converter (48) for performing the two functions. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have two pulse generators and two converters for producing positive and negative pulses, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

As per claim 20, Momotani shows in Fig. 6 that the negative current pulse(s) (62) have an energy content and the positive current pulse(s) (61) have an energy content, the energy content of the negative current pulse(s) (62) being less than the energy content of the positive current pulse(s) (61).

**6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Momotani, in view of Feldsteln (US 5,621,297).**

Momotani discloses the claimed invention except for the electrochemical device being a primary cell.

However, Feldstein discloses an apparatus for pulse charging and discharging of a dry primary cell (Abstract and Col. 2, lines 36-65).

One of ordinary skill in the art would have recognized that secondary cells and primary cells are known equivalent in the art for providing electrical power.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device as disclosed by Momotani to substitute a secondary cell for a primary cell resulting in the predictable result of charging and discharging to provide electrical power.

**7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Momotani, in view of Maurer (US 6,179,984).**

Momotani discloses the claimed invention except for the electrochemical device being an electroplating apparatus.

However, Maurer discloses a circuit for supplying pulsed current in electroplating systems (Abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device as disclosed by Momotani, to have an electroplating apparatus or system to improve the properties of the electroplate layers as a result of pulse charging (Col. 1, lines 1-18).

**8. Claims 10-18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momotani, in view of Fazakas (US 6,479,969).**

Momotani discloses the claimed invention except for that the power converter comprises at least two inductors and at least two capacitors to form two or more series resonant circuits in parallel, arranged such that the currents in the inductors are unidirectional and the currents in the capacitors are bidirectional, the windings of the at least two inductors are wound on a single core, wherein a first further winding is arranged on the core to form a step-down transformer, wherein the further winding is arranged to provide unidirectional current pulses to the electrochemical device via a rectifying diode and a second further winding arranged on the core to form a demagnetization winding, while firing current pulses are produced for a number of thyristors (Th) to control the charging and discharging of the resonant circuit(s) by switching between components of the resonant circuit(s).

However, Fazakas shows in Figs. 1a-1c, 6, 7 and 9, a circuit arrangement for pulsed charging of a battery (B) comprising:

at least two inductors and at least two capacitors (C1, C2) to form two series resonant circuits in parallel, arranged such that the currents in the inductors are unidirectional and the currents in the capacitors are bidirectional, the windings of the at least two inductors are wound on a single core (TR1), wherein the first winding is arranged on the core to form a step-down transformer (TR1), wherein the first winding is arranged to provide unidirectional current pulses to the battery (B) via a rectifying diode of a rectifier (Gr) and the second winding arranged on the core to form a demagnetization winding, while firing current pulses are produced for a number of thyristors (Th) to control the charging and discharging of the resonant circuit(s) by



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switching between components of the resonant circuit(s) (Col. 1, lines 19-57 and Col. 5, line 37-Col. 6, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device as disclosed by Momotani to use the circuit as taught by Fazakas to provide a more favorable charging method and to improve the battery parameters (Col. 2, lines 44-49).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAMY RAMADAN whose telephone number is (571) 272-9761. The examiner can normally be reached on Mon-Fri 7:30 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on (571) 272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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